

Discussion group notes: Spatial population models—structure and applications

This discussion group consisted almost entirely of ecological modellers/theoretical ecologists who focused on how models might be made more useful to managers in a short time frame. This group focused on how existing modelling approaches may be used to develop guidelines for management decisions and discussed how to translate what general rules may already exist for incorporating spatial considerations into population evaluations into terms useful for managers.

- Identified a need to develop models from a base that is both simple and amenable to refinement. Noted that many management questions may already be answerable using available models and theory. One way to exploit what is already known about spatially-explicit population dynamics may be to develop a hierarchy of Rules of Thumb for integrating spatial considerations into management decisions. The hierarchy would be structured according to increasing spatial complexity, realism, and available data, and would include sets of assumptions and guidelines for when a given rule may be most applicable. It was proposed that such a hierarchy could be developed through the application of different models (varying in complexity and data required) to simulated data that varied in its underlying structure and the resolution of sampling. Discussion group members propose investigating similar management issues (e.g., whether to focus restoration/protection on a single large population or a smaller counterpart) by applying different modeling frameworks presented at the meeting, and comparing these analyses to identify commonalities or differences that may have important implications for how spatial structure is thought to affect population viability.
- Noted that it is necessary to use theory to estimate *absolute* extinction probabilities to the extent possible: *relative* risks are useful for comparing management options, but only *absolute* risks are truly useful for evaluating population viability and developing delisting goals.